

REMARKS

Claims 43-74 are pending in the application for the Examiner's review and consideration. Reconsideration of the October 23, 2003 Official Action is respectfully requested.

Claims 43-74 stand rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,397,321 to Stuetz ("Stuetz"). The reasons for this rejection are stated at numbered paragraph 2 on pages 2-4 of the Official Action. This rejection is respectfully traversed.

Independent Claim 43 is directed to a cut filler composition having "at least one additive capable of acting as an oxidant for the conversion of carbon monoxide to carbon dioxide and/or as a catalyst for the conversion of carbon monoxide to carbon dioxide, *wherein the additive is in the form of iron oxide nanoparticles*" (emphasis added). Stuetz fails to suggest the cut filler composition recited in Claim 43 for at least the following reasons.

In the Official Action, it is alleged that "it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the catalyst of Stuetz as a colloidal dispersion . . . in order to require a lessened amount of catalyst . . ." (Official Action at page 3). Reconsideration of the rejection is requested in view of the following discussion.

As set forth in MPEP §716.01(a) entitled "Weighing Objective Evidence", the ultimate determination of patentability must be based on consideration of the entire record with due consideration to the persuasiveness of any arguments and any secondary evidence. Moreover, all of the competent rebuttal evidence taken as a whole should be weighed against the evidence supporting the *prima facie* case. MPEP §2144.08, paragraph IIB provides guidance in determining whether rebuttal evidence is sufficient to overcome a *prima facie*

case of obviousness. In the present case, it is submitted that any *prima facie* case of obviousness is overcome by a showing of unexpected results.

Stuetz discloses a catalyst composition consisting of (a) fine ash and (b) a transition metal compound (see Abstract of Stuetz). The catalyst composition can comprise (a) at least one component selected from potassium and calcium compounds, and (b) at least one component selected from transition metal compounds (column 2, lines 23-29 of Stuetz).

With respect to particle size, Stuetz states that the catalyst composition is in the form of a fine powder having a particle size less than about 77 microns (column 2, lines 59-64 of Stuetz).

Stuetz further states that the catalyst composition particles should be small enough to pass through a 170 mesh screen (column 2, lines 64-66 of Stuetz). Although Stuetz provides examples of catalysts which include Fe_2O_3 in combination with ash (see Table II) or CaO (see Table III), there is no disclosure or suggestion in Stuetz of using iron oxide nanoparticles. Further, as explained below, iron oxide nanoparticles provide new and unexpected results with respect to reduction in CO compared to micron size iron oxide.

As shown in Fig. 3 (copy attached as Attachment A) of the present application, 3 nm size iron oxide exhibits greatly improved CO to CO_2 conversion compared to 5 μm size iron oxide. In fact, the 3 nm iron oxide initiates conversion of CO to CO_2 at temperatures of 100 to 200°C with greatly increased conversion occurring between 200 and 300°C whereas the 5 μm size iron oxide initiates CO to CO_2 conversion at temperatures between 200 and 300°C with the conversion rate increasing gradually at temperatures of 300 to 500°C. It can be seen from Fig. 3 that the iron oxide nanoparticles exhibit dramatically higher conversion of CO to CO_2 compared to the 5 μm iron oxide. Accordingly, it is submitted that Fig. 3 of the specification clearly shows new and unexpected results for iron oxide nanoparticles

compared to micron size iron oxide particles. Thus, any *prima facie* case of obviousness based on Stuetz is deemed rebutted by the foregoing evidence of unexpected results.

Claims 44-52 depend from Claim 43 and thus also are patentable over Stuetz for at least the same reasons that Claim 43 is patentable.

Independent Claim 53 is directed to a cigarette comprising a tobacco rod, which comprises the cut filler as recited in Claim 43. Accordingly, the cigarette recited in Claim 53 also is patentable over Stuetz for at least the same reasons that Claim 43 is patentable.

Furthermore, Claims 54-63 depend from Claim 53 and thus also are patentable over Stuetz for at least the same reasons that Claim 53 is patentable.

Independent Claim 64 recites method of making a cigarette, which comprises, *inter alia*, "(i) adding an additive to a cut filler, wherein the additive is capable of acting as an oxidant for the conversion of carbon monoxide to carbon dioxide and/or as a catalyst for the conversion of carbon monoxide to carbon dioxide, wherein *the additive is in the form of iron oxide nanoparticles*" (emphasis added). Accordingly, the method of making a cigarette recited in Claim 64 also is patentable over Stuetz for at least the same reasons that Claim 43 is patentable. Claims 65-74 depend from Claim 64 and thus also are patentable over Stuetz for at least the same reasons that Claim 64 is patentable.

Withdrawal of the rejection is respectfully requested.

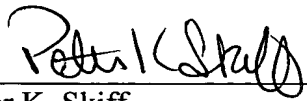
It is submitted that the difference between the claimed subject matter and the prior art are such that the claimed subject matter, as a whole, would not have been obvious at the time the invention was made to a person having ordinary skill in the art.

In view of the foregoing, it is submitted that the present application is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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